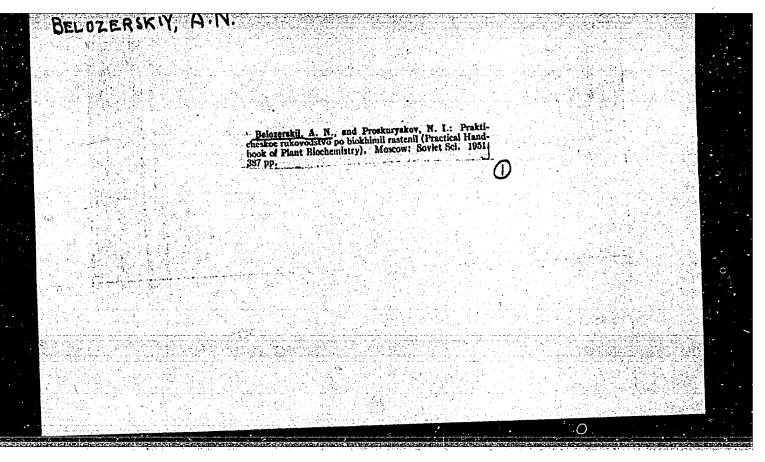
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		of j	n the Chemical Composition of D Relation to the Age of the Cult rskiy, V. B. Korchagin, T. I. S of Bot, Moscow State U imeni M of Bot, Moscow State U imeni M SSSR" Vol IXXI, No 1, pp 89-92 lysis of diptheria bacteria aft ys; cultivation and tabulates a tituents present at each time. in nature of volutin, which is	Diphteria, E
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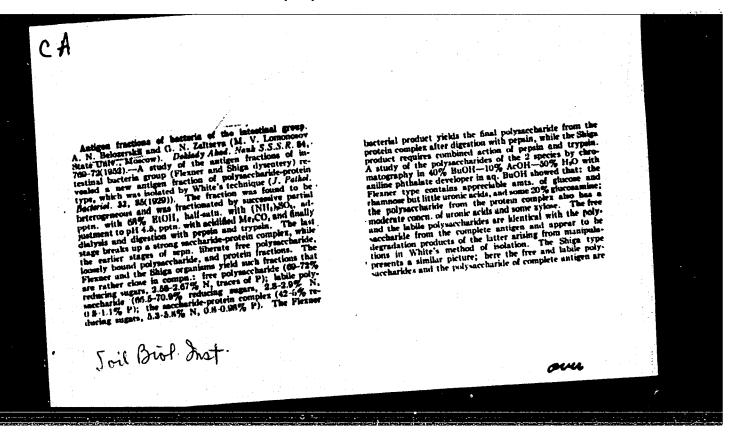


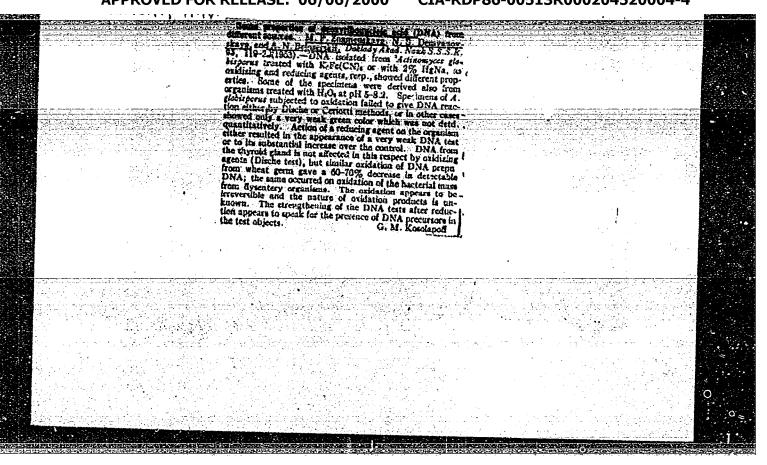
BELIOZERSKIY, A. N., FROSKURYAKOV, F. I.

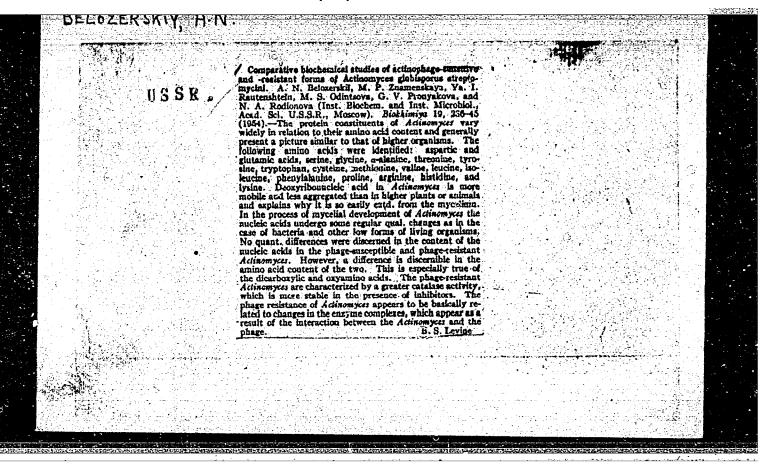
Botanical Chemistry

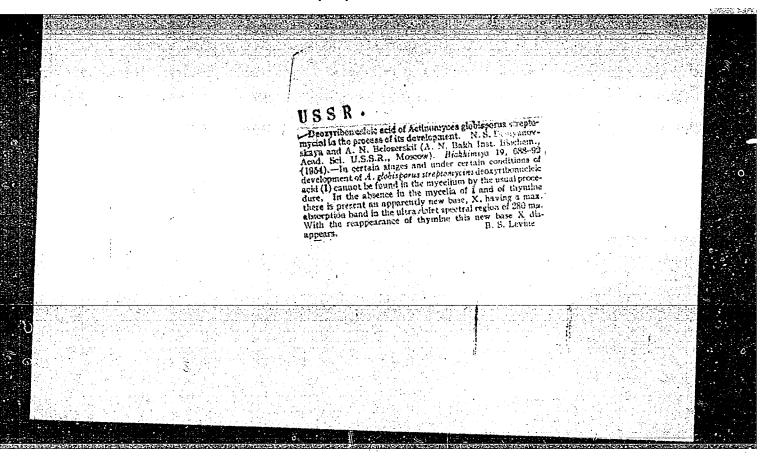
"Practical manual of plant biochemistry." Reviewed by V. L. Kretovich. Biokhimia 17, No. 1, 1952

Ponthly List of Russian Accessions, Library of Congress, June 1952. Unclassified





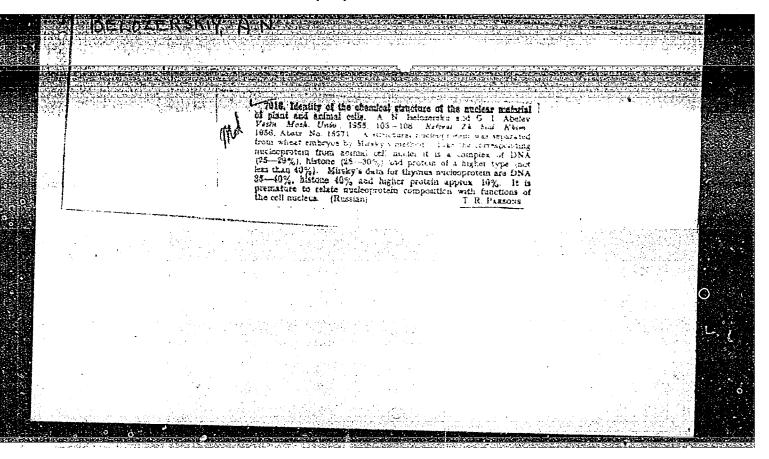


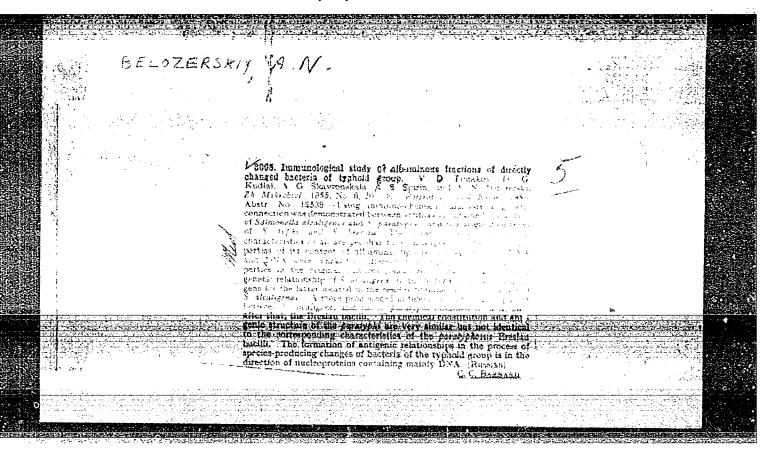


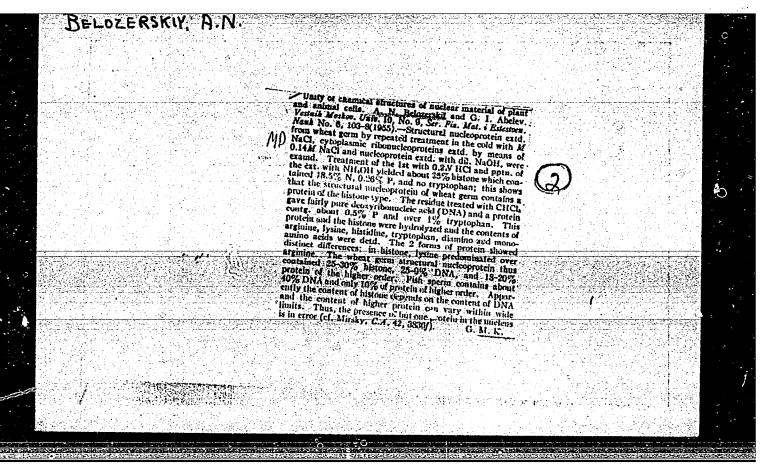
BELOZERSKIY. A. N.

[Metaphosphates and nucleic acid complexes of yeast and the chemical nature of volutin; reports and papers of the Third International Gongress of Biochemistry, Brussels, 1-6 August, 1955]. O metafosfatno-nukleinovykh kompleksakh drozhzhei i o khimicheskoi prirode voliutina; soobshchenia i doklady na III Mezhdunarodnom biokhimicheskom kongresse, Briussel', 1-6 avgusta 1955 g. Moskva, Izd-vo Akad.nauk SSSR, 1955.

20 p. [Parallel texts in Russian and French]. (MIRA 11:6)

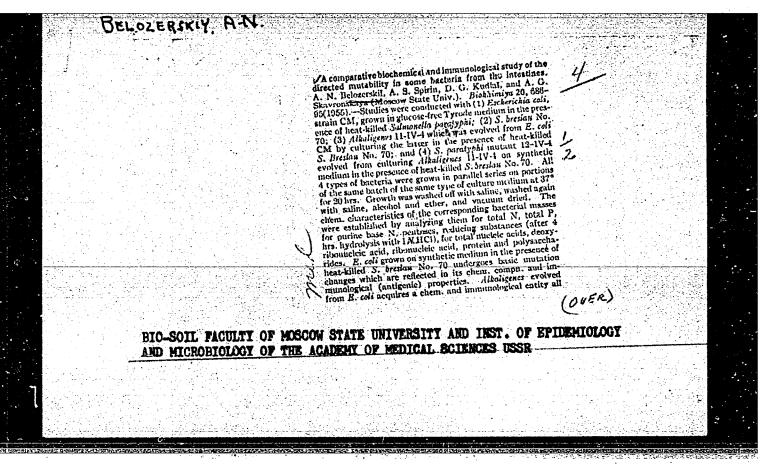


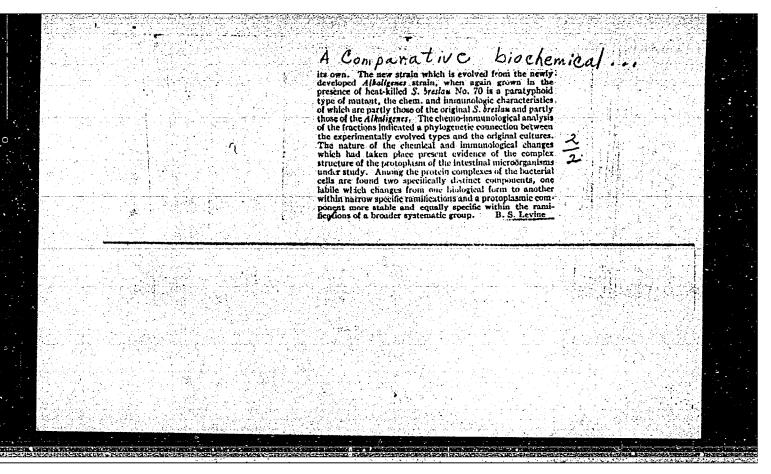




BELOZERSKIY, A.N.,

"Biochemistry of metabolism". N.M.Sisakian. Reviewed by A.N.Belozerskii. Biokhimiia, 20 no.4:511-512 Jl-Ag '55. (METABOLISM) (SISAKIAN, N.M.) (MLRA 8:12) (MLRA 8:12)





BELOZERSKIY, A.N., professor, doktor biologicheskikh nauk,

Problems of proteins. Hauka i shisn' 22 no.5:5-8 My '55 (MIRA 8:6)

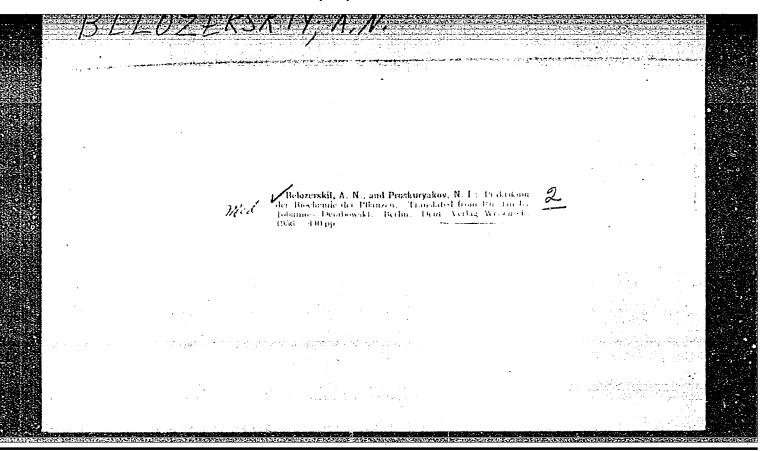
1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Proteins)(Mucleic acids)

BELOZERSKIY, A. N., KUDLAY, D. G., TIMAKOV, V. D., SKAVRONSKAYA, A. G., SPIRIN, A. S.

"An Immunological Study of Protein Fractinn of Transformed Bacteria of the Enteric Group." Proceedings of Inst. Epidem and Microbiol im. Gamaleya 1954-56.

Laboratory of Microbiology, Timakov, V. D. professor, Active Member, Academy of Medical Sciences USSR, head, Inst. Epidem and Microbiol im. Gamaleya AMS USSR

SO: Sum 1186, 11 Jan 57.



PMARSE, A.G. Everson; VENUSTERN, T.V. [translator]; BAYEV, A.A. [translator] BELOZERSKIY, A.M., redaktor; ENDEN, M.G., redaktor; GERASIMOVA, Ye.S., Tekhnicheskiy redaktor

[Histochemistry, theoretical and applied. Translated form the English] Gistokhimiia; teoreticheskaia i prikladnaia. Perevod s angliiskogo T.V. Venkstern i A.A. Baeva. Pod red. i s predisl.

A.N. Belozerskogo. Moskva, Izd-vo inostrannoi lit-ry, 1956. 488 p.

(Physiological chemistry) (MLRA 10:1)

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000204520004-4

BELOZERSKIY, A, N, USSR / Microbiology. General Microbiology.

F-1

Abs Jour : Ref Zhur - Biol., No 2, 1958, No 5064

: Spirin, A.S., Belozerskiy, A.N. Author

8 Not given Inst

& The Composition of Nucleic Acids in Experimental Variabi-Title lity of Intestinal Bacteria.

Orig Pub : Biokhimiya, 1956, 21, No 6, 768-775

Abstract : A determination was made of the composition of RNA and DNA in Bacterium coli commune CM, Bact. breslau 70, alkali-producer 11-UV-4, obtained from intestinal bacilli by cultivation with heat-killed Breslau bacteria. The composition of nucleic acids (NA) was determined by paper chromatography with subsequent UV-spectrophotometry of eluates in one batch directly in the tested material without a preliminary sepa-

\$ 1/3 Card

im. A.N. Bakh, AN-USSR, chvenny Faculty, moscow d Bologrochven RNA, alike in all four forms, unues

APPROVED FOR RELEASE: 06/06/2000

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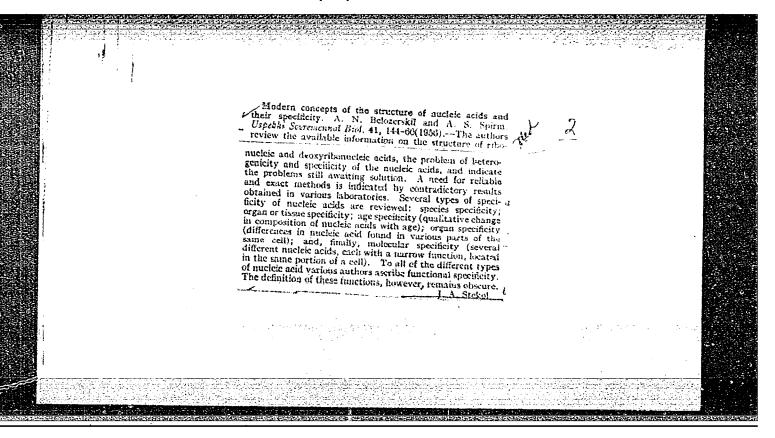
USSR / Microbiology. General Microbiology.

F-1

Abs Jour : Ref Zhur - Biol., No 2, 1958, No 5064

: The established composition of NA in the intestinal bacillus differed from NA composition established as a result of investigations by Chargaff and co-workers. The author assumes that there is a connection between DNA and specificity of protein synthesis and is inclined to admit that there is no direct genetic connection between DNA and RM.

Card : 3/3



AIN, BELOZERSKIY, Antibiosis and Symbiosis. F-2 Microbiology. USSR/

Antibiotics

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24134

Author: Belozerskiv, A. N., Aseeva, I. V., Moroz, A. F.

: A Comparative Study of the Content of Nucleic Inst Acids in Cultures of Some Bacteria Sensitive and Title

Resistant to Grisemin and Streptomycin.

Orig Pub: Dokl. AN SSSR, 1956, 109, No 1, 149-151

Abstract: A study was conducted on the change of chemical composition and the speed of growth of staphylo-coccus aureus and B. coli in the process of acquiring resistance to grisemin and streptomycin. Generation of resistance to these antibiotics was

accompanied by a decreased quantity of RNA (determined by pentoses) in bacterial cells, by retarding

Moskovskiy gosudarstvennyy universitet im M. V. Lomonosov i Institut epidemiol-

ogii im N. F. Gamaleya Akdemiii meditsinskikh nauk SSSR. Predstavleno Akademiko

Card 1/2 A. I. Oparinym.

Microbiology. Antibiosis and Symbiosis. USSR/ Antibiotics

F-2

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24134

: Belozerskiy, A. N., Aseeva, I. V., Moroz, A. F. Inst

: Not given

: A Comparative Study of the Content of Nucleic Title

Acids in Cultures of Some Bacteria Sensitive and Resistant to Grisemin and Streptomycin.

Orig Pub: Dokl. AN SSSR, 1956, 109, No 1, 149-151

Abstract: A study was conducted on the change of chemical composition and the speed of growth of staphylococcus aureus and B. coli in the process of acquiring resistance to grisemin and streptomycin. Generation of resistance to these antibiotics was accompanied by a decreased quantity of RNA (determined by pentoses) in bacterial cells, by retarding

Moskovskiy gosudarstvennyy universitet im M. V. Lomonosov i Institut epidemiologii im N. F. Gamaleya Akdemiii meditsinskikh nauk SSSR. Predstavleno Akademiko Card 1/2

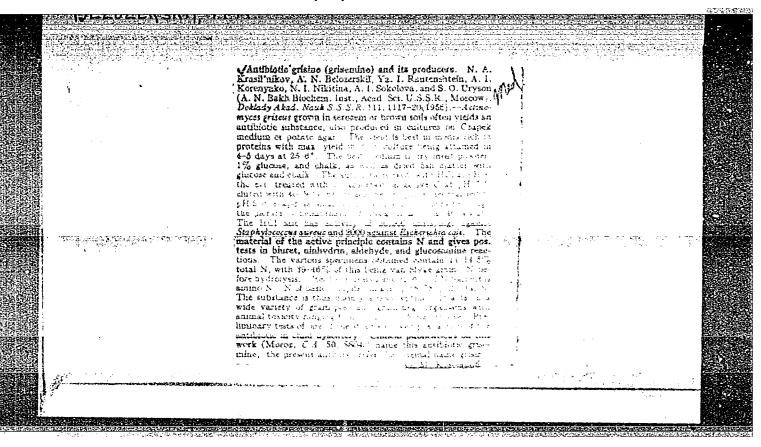
USSR/ Microbiology. Antibiosis and Symbiosis.

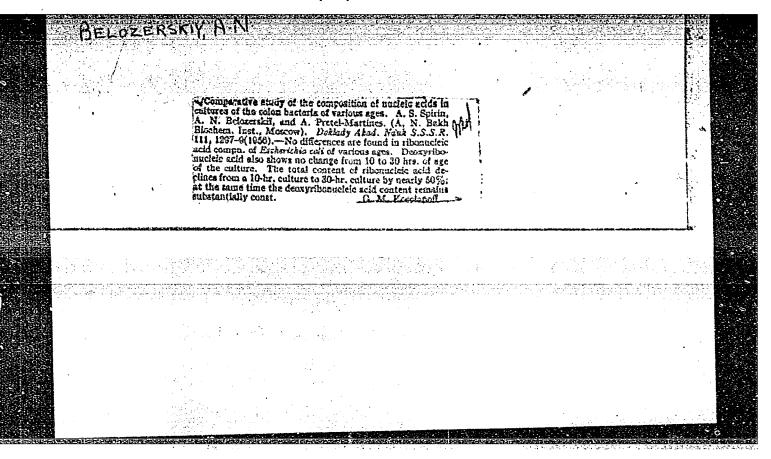
F-2

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24134

Abstract: the cycle of culture development and, in connection with this, lower yields of bacterial mass. The cycle development is retarded to such an extent that in cells of a 48-hour culture of B. coli, rein the culture of a sensitive variant of the same age. The quantity of RNA regularly decreased with essentially did not change during the period of the entire development cycle.

Card 2/2





BELOZERSKIY, A. N.

"On the Species Specificity of the Mucleic Acids in Bacteria," a paper presented at the International Symposium on the Origin of Life, Moscow, 19-24 Aug 1957.

ZNAMENSKAYA, M.P.; BELOZERSKIY, A.N.

Some derivates of gramicidin C. Antibiotiki 2 no.1:36-40 Ja-F '57. (MIRA 12:11)

1. Institut biokhimii imeni A.N. Bakha AN SSSR.

(ANTIBIOTICS, related cpds.

gramicidin C, derivatives)

ASEYEVA, I.V.; BELOZERSKIY, A.N., prof.

Effect of light and starvation on the biosynthesis of nucleic acids in wheat seedlings. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 12 no.417-23 *57. (MIRA 11:5)

1. Kafedra biokhimii rasteniy Moskovskogo gosudarstvennogo universiteta. (Plants--Metabolism) (Nucleic acids) (Plants, Affect of light on)

RELOZERSKIY, A.N.; KULAYEV, I.S.

ISE 10 ZERSKIY, A.N

KULAYEV, I.S.; BELOZERSKIY, A.N.

P32 in the study of the physiological role of polyphosphates in the development of Aspergillus niger [with summary in English]. Biokhimiis

22 no.3:587-596 My-Je '57. (KIRA 10:11)

1. Biologo-pochvennyy fakulitet Moskovskogo universiteta im, M.V.

Lomonosova.

(ASPERGILLUS NIGHR, metabolism,
polyphosphates, radiophosphorus in determ. of physiol.
role in develop. (Rus))
(PHOSPHATES, metabolism,
Aspergillus niger, radiophosphorus in determ of physiol.
role of polyphosphates in develop. (Rus))

USSR/Microbiology. General Microbiology. Systematics, Morphology. Cytology.

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 62199

doubts as to the accuracy of their relation to this family. By analogy, considerable differences in DNA composition between Eacterium morganii and P. vulgaris affirms that the relation of Bact. morganii to E. Proteus is scarcely strictly proven. RNA nucleotide composition possesses a considerably loss expressed specificity of species and quite certain, although insignificant differences, uncovered only in distant ficant differences, uncovered only in distant species. Similarly, between the RNA and DNA compositions there is a known correlation, which positions there is a known correlation, which expresses itself in the increase of the relationship suanylic acid + cytidylic acid/ adenylic acid + uridylic acid in RNA by the transition from species with a loss significant guanine + cytosine/ adenine + thymine in DNA to species

Card

2

USSR/Microbiology. General Microbiology. Systematics F-1

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Abs Jour: Ref Zhur - Biol., No 1.4, 1958, No 62199

with more significance for this relationship.
Studies of RMA and DNA nucleotide composition,
together with special microbiological tests, can
be used to solve problems about the systematic
location of this or other bacterial species.
-- T.I. Tikhonenko

Some data on the formation of complexes of reserve proteins with nucleic acids [with summary in English]. Biokhimita 22 nc.5: 765-775 S-0 '57. (MIRA 11:1)

1. Institut biokhimit im, A.N.Bakha Akademit nauk SSSR, Moskva. (NUCLEOPROTEINS, form from meerve proteins & nucleic scids (Rus))

USSR / Microbiology. General Microbiology. Physiol-F-1 ogy and Biochemistry.

Abs Jour: Ref Zhur-Biol., No 16, 1958, 71901.

: Belozerskiy, A. N.; Zaytseva, G. N., Gavrilova, L. P., Mineyeva, L. V. Author

: Not given. Inst

: Chemistry of Azotobacter. I. Nitrogenous Sub-Title

stances of Azotobacter.

Orig Pub: Mikrobiologiya, 1957, 26, No 4, 409-417.

Abstract: The quantity of protein compounds in an Azotobacter cell (A. agile, A. vinelandii, A. chroc-coccum were investigated) changes during the development cycle from maximal in the latent phase to minimal at the end of the log phase; it did not depend essentially on the source of the nitrogen. The RNA quantity, being minimal

Card 1/2

CIA-RDP86-00513R000204520004-4" APPROVED FOR RELEASE: 06/06/2000

BELOZEKSKIY, H. W.

KRASILI NIKOV, N.A.; BELOZERSKIY, A.N.; RAUTENSHTEYN, Ya.I.; KORENYAKO, A.I.;

NIKITINA, N.I.; SOKOLOVA, A.I.; URYSON, S.O.

The antibiotic grisein (grisemin) and its producers [with summary in English]. Mikrobiologiia 26 no.4:418-425 J1-Ag '57. (MIRA 10:12)

1. Institut mikrobiologii AN SSSR i Institut biokhimii im. A.N.Bakha AN SSSR, Moskva. (ANTIBIOTICS. grisemin, prod. organisms (Rus))

USSR / Microbiology. General Microbiology. Physiol- F-1 ogy and Biochemistry.

Abs Jour: Ref Zhur-Biol., No 16, 1958, 71902.

Author : Zaytseva, G. N.; Belozerskiy, A. N.

Inst: Not given.

Title : Chemistry of Azotobacter. II. Amino-acid Comp-

osition of Azotobacter Agile Depending on the

Age of Culture.

Orig Pub: Mikrobiologiya, 1957, 26, No 5, 533-540.

Abstract: 19 amino acids were identified and quantitatively determined in the composition of A. agile proteins; in addition, a series of unidentified compounds were found in the chromatograms which gave a color reaction with ninhydrin. The basic mass of the Azotobacter proteins are mixed proteins of a non-alkaline character. The amino acid

Card 1/3

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

USSR / Microbiology. General Microbiology. Physiol- F-1

Abs Jour: Ref Zhur-Biol., No 16, 1958, 71902.

Abstract: amino acid composition of the protein of A. agile cultures which fixed atmospheric natrogen and were cultivated in ammonium nitrogen. -- T. A. Kalininskaya.

Card 3/3

USSR / Microbiology. General Microbiology. Physiology F and Biochemistry.

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5445.

Abstract: preliminary separation of the proparations).

No changes were found in the RNA composition of the cells of A. agile in the latent, logarithmic, and stationary phases of growth on a medium with ammonia and molecular nitrogen.

The composition of the total RNA of three Azotobacter species was similar; the differences discovered did not exceed the average error of the method. The ratio of guanine f cytosine/adenine f thymine in DNA of A. agile, A. vinelandii and A. Chrococccum was, respectively, 1.21-1.23, 1.28, and 1.34-1.35, which served the authors as a basis for drawing conclusions as to the possible specificity of the DNA studied. -
T. I. Tikhononko.

Parts I, II - see RZhBiol., 1958, No 71901-71902.

Card 2/2

Comparative Studies on the Ribonucleic Acid Composition in the PA - 3169 Different Species of Bacteria.

composition of DNA differed widely. On the other hand, the nucleotide composition of RNA is very similar even in the case of widely differing types. Thus it may be concluded that with respect to INA, even in the case of an investigation of summary composition, there are numerous stages, which, however, cannot be said with respect to RNA. (1 Table, 1 Slavic Reference).

ASSOCIATION:

Institute for Biochemistry "A.N.BAKH" and Faculty of Soil Biology of Moscow State University "M.V. LOMONOSOV".

PRESENTED BY: SUBMITTED:

OPARIN, A.I., Member of the Academy, on 15.1.1957

AVAILABLE:

11.1.1957

Library of Congress

Card 2/2

AUTHORS

and a complete

BELOZERSKINA.N.

Belozerskiy, A.N., Naumova, I.B., TITLE On the Polysaccharide Fractions of Actinomyces Globisporus Strepto-

(O polisakharidnykh fraktsiyakh Actinomyces globisporus streptomycini Kras

PERIODICAL

Doklady Akademii Nauk SSSR, 1957, Vol 115, Nr 5, pp 957-960(U.S.S.R.)

ABSTRACT

Thus far the existence of the mentioned carbohydrates in the actinomiyees, especially the ones named above, has not been very carefully dealt with in scientific literature. According to some writers these actinomyces do not contain cellulose and chitin. Some writers discovered that there were no major accumulations of polysaccharides, others again are of the opinion that the cell membrane of the str.fradiae also contained muco-polysaccharide besides the proteins. No other writers succeeded infinding reducing substances after a hydrolysis of the mycclium of the actinomyces mentioned in the title through acids of different concentration. The authors of this treatise describe the insulation and the fractions of the mentioned actinomyce; they obtained these fractions in the investigation of the "superfluous"phosphor of the fraction insoluble in acids. The stem LS-1, namely a 2 day old myzel, was sowed on a soya-substratum with glucosis. In table 1 the quantitative content of phosphor in every fraction is expressed in percents of the dry substance of the mycelium. This shows that more than 70% of the mycelium-phosphor belongs to the phosphor of the fraction insoluble in acids. The phosph-

Card 1/3

On the Polysaccharide Fractions of Actinomyces Globi - 20-5-29/54 sporus Streptomycini Kras.

or of the fraction insoluble in acids is largely presented by orthophosphate. The nucleinacids, calculated according to the amount of phosphor, show nearly three times the amount found with the spectroscope. Therefore the first fraction contains other compounds with phosphor of a non-nuclear nature. The amount of "excess" phosphor is quite high (44% of the phosphor contents in myzel). The authors tried to explain the structure of these compounds, which are responsible for the "superfluous phosphor". It could not have been polyphosphate, phosphorproteids, phytine, nor glyzerophate. After a number of experiments it was possible to isolate all the "excess" phosphor in corresponding fractions in connection with the pdysaccharids. This method is described. Table 2 shows the results which characterize the 2 preparations from 2 fractions. Both fractions react positively to carbonhydrate: molar with anthron, tryptophan and carbazol. These results show clearly that the preparations obtained contain polysaccharides. The nitrogen which they also contain should obviously be considered the same as that of amino-sugar. The phosphor, however, is not that of nuclein-acids, which is completely absent in the preparations. Phosphor of both fractions is difficult to hydrolize. About half the amount of phosphor was present in a phosphomonether compound; the other half was even more strongly bound. A quantitative-chromotographic analysis shows that the purefied polysaccharides of fraction I and II differed in their composition. In

Card 2/3

On the Polysaccharide Fractions of Actinomyces Globi- 20-5-29/54 sporus Streptomycini Kras.

fraction I: galactose, glucose, arabinose, mannose and xylose. The existence of rebose in fraction II is connected with the existence of small amounts of ribonuclein-acid. Furthermore the chromatogram shows that the homonymious kinds of sugar in the 2-polysaccharides differ largely in their quantity. Thus glucosis prevails in one polysachharide, mannose in the other. The discovery of the latter is interesting, as it can point out a mannose reaction in this organism. Under certain circumstances this again can be combined with the formation of mannoadostreptomyzin. The question whether phosphor is present in both polysaccharides has to be dealt with separately. There is 1 figure, 3 tables, 6 Slavic references.

ASSOCIATION Moscow State University im. M. V. Lomonosov

PRESENTED

(Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova). By A. I. Oparin, Academician, June 15, 1957

SUBMITTED AVAILABLE

June 13, 1957

Card 3/3

Library of Congress.

BELOZERSKIY, A. N.

"The Composition of nucleinic acids secreted by micro-organisms and plants."

report presented at the 10th All-Union Conf. on Highly Molecular Compounds, Biologically Active Polymer Compounds, Moscow, 11-13 June 1958. (Vest.Ak Hank SBSR, 1958, No. 9, pp. 111-113)

LI DIN KHO [Li Ting-huo]; BELOZERSKIY, A.N.

Phosphorus compounds and nucleic acids in wheat seed during the process of maturation. Vest. Mosk. un. Ser. biol., pochy...
Geol., geog. 13 no.2:15-28 '58. (MIRA 11:9)

1. Moskovskiy gos. universitet, Kafedra biokhimii rasteniy. (Wheat) (Phosphorus metabolism) (Nucleic acids)

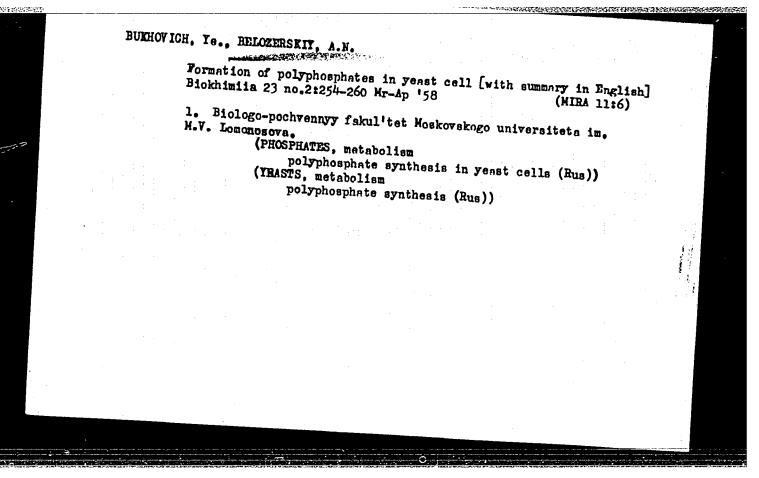
SPIRIN, A.S.; BEIOZERSKIY, A.N.; KUDLAY, D.G.; SKAYRONSKAYA, A.G.; MIFFEREVA, V.G.

Changes in the composition of nucleic acids during the formation of anccharolytically inert forms of enteric bacteria Lwith summary in English]. Biokhimiia 23 no.1:154-163 Ja-F '58. (MIRA 11:3)

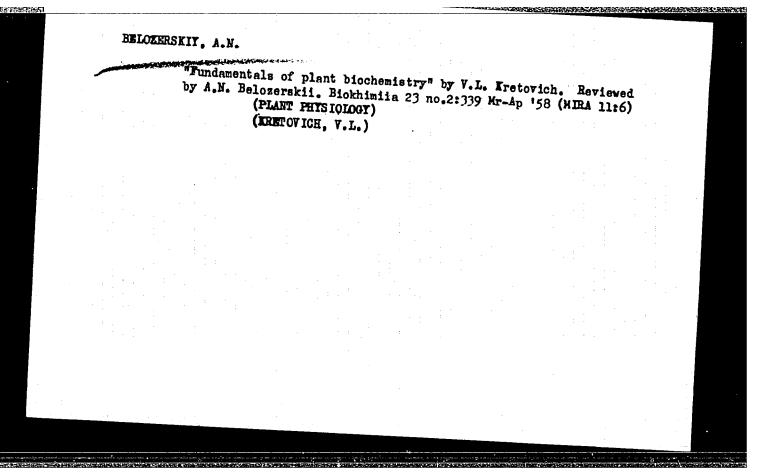
1. Institut biokhimii im. A.N.Bahha AN SSSR, Biologo-pochvennyy fakul'tet Moskovskogo universiteta i Institut epidemiologii i (MIGLEIC ACIDS, metabolism,

Enterobacteriaceae, eff. of form. of saccharolytic inert strains (Rus)

(HACTERIA, Enterobacteriaceae, eff. of form of saccharolytic inert strains on nucleic acid metab. (Rus)



"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4



BELOZERSKIY, A.N.; URYSON, S.O.

Nucleoprotein composition of cell nuclei in certain plants [with summary in English]. Biokhimiia 23 no.4:568-573 Jl-Ag '56.

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R.,

(MUCLEOPROTEINS, metab.
 plants (Rus))

(PLANTS, metab.
 nucleoproteins (Rus))

Chemistry of Azotobacter. Report No.4: Amino acid composition of three Azotobacter species cultured on different sources of nitrogen nutrition [with summary in English]. Mikrobiologiia 27 no.1:7-11 Ja-F '58.

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova, (AZOTOBACTER, metab.

amino acids of 3 species cultured with different nitrogen sources (Rus)

(AMINO ACIDS, metab.
Azotobacter, 3 species cultured with different nitrogen sources (Rus)

BELOZERSKIY, A.N., IMSHENETSKIY, A.A., ZAYTSEVA, G.N., PEROVA, K.Z.

Comparative morphology and biochemistry of mucoid and matt and dull cultures of Azotobacter chrocococcum [with summary in English]. Mikrobiologiia 27 no.2:150-156 Mr-Ap '58 (MIRA 11:5)

1. Institut mikrobiologii Akademii nauk SSSR i Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

(AZOTOBACTER, culture

chroccoccum, comparative morphol. & biochem. of slimy and dull cultures (Rus))

ZAYTSEVA, G.N., BELOZERSKIY, AN.

Chemistry of Azotobacter. Report No.5: Studying phosphorus compounds of Azetobacter agile and their relation to the age of the culture and the source of nitrogen nutrition. [with summary in English]. Mikrobiologiia 27 no.3:308-315 My-Je 158 (MIRA 11:9)

1. Biologo-pochvennyy fakulitet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

(AZOTOBACTER, metabolism.

agile, phosphates (Rue))

agile, phosphates (Rus))
(PHOSPHATES, metabolism
Azotobacter agile (Rus))

ZAYTSEVA, G.H., HELOZERSKIY, A.H.

Chemistry of Asotobacter. Report no.4s Carbohydrate composition of Asotobacter agile 22-D as related to the age of the culture [with summary in English]. Mikrobiologiia 27 no.4s416-421 Jl-Ag 158

1. Biologo-pochwennyy fakulitet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

(AZOTOBACTER, metabolism

agilis, carbohydrate composition in relation to age of culture (Rus))
(CARBOHYDRATES, metabolism

THE REPORT OF THE PROPERTY OF

Asctobacter agilis composition in relation to age of culture (Rus)

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

BELOZERSKIY, A.N.

AUTEOSS:

Beliczereniy, A. N., Shugayeva, N. V., 20-119-2-39:09

TITLE:

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The Describenucleic Acid Composition of Different Species of Actinomycetes (Sostav demoksiricenskiesno akislot u razlichnykh vidov aktinomitsetov)

PERIODICAL:

Pr - 330-352 (USSR)

ABSTRACT:

The study of the nucleotide composition of these colds (DNA) in other organism, especially in pacteria, and the solution of several problems of the peculiarity of species of these compounds (refs 1-4). However, the limits of this specifity are not yet determined. It is not yet clear in nowfar the composition of BNA differs in biologically and systematically related types (refs 1,4). In the present work the composition of assumptionally acid is studied within a rather limited group of minute organisms, as mentioned in the title. Because the creation of the pecularity of species of DNA, its similar less or differences in the systematics of the ment ones organisms might be of help. The methods of investigation were

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The Desoxyribonucleic Acid Composition of Different Species of Actinomycetes

20-119-1-39/60

composition of DNA are given for 6 types of Anticomposition of DNA are given for 6 types of Anticomposition as well as for Mycohacterium tuberculosis forces For her for M. diphtnerias. These data are the mesos of Jec 1108 determinations. The value of the variation meeting single types is discussed. The only primary index of the specifity of DNA which sims up all possible deviation in the relation of nitrogen bases is the value.

 $\frac{G + T_{\odot}}{A + T}$

In the case of all Actinomycetes it ARS > 2.5. The or interconfirm that the Actinomycetes have nighted nithered known GTs type of DNA (ref 4). In this connection they compare the most extreme position among the various types of bacteria. The strong difference between the DNA composition of the Actinomycetes and the Mycobacterian intercalous indicates that the first and the acid proof bacteria.

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The Desoxyribonucleic Acid Composition of Different Species of Actinomycetes

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represent two different rather isolated groups of the species of the Actinomycetes (class Actinomycetales according to Vakaman). However, the relatively high value of the relation (G + Ts) (A + T) as compared to other bacteria agrees with the ract that these micro bacteria belong to the same systematic category as the actinomycetes (refs 6,7). On the other hand, the comparison of the DNA of the Actinomycetes and the M. tuberoulosis with the DNA of M.diphtheriae leads to the conclusion that the latter type does not belong to the class of the Actinomycetes and even less to the species of the Mycobacterium. It must be placed to an independent family of the order Eubacteriales (ref 7). In the individual types of Actinomycates the DNA composition is closely related so that they form a group which is perhaps systematically close. Statistically the 4 types of Actinomycetes can absolutely not be distinguished. Thus, no characteristic types exist in the case of types of one and the same species as to the DNA composition. The authors gave the explanation earlier (ref 4): The mentioned differences concern only single

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The Desoxyribonucleic Acid Composition of Different Species of Actinomycetes

melecules or even their sections while the main mass remains identical. The differences are too slight to be detected by the applied methods. As for as the two other species of Actinomycetes (Proactinomyces and Micromomospers) are concerned, a difference from the Actinomycetes can be observed inspite of the close relation as to the DNA composition. However, it is too small to draw final

There are 1 table and 7 references, 3 of which are Soviet. ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonozevs

(Moscow State University imeni M. V. Lomonosov) Institut biokhimii im. A. N. Bakha Akademii, nauk SSSR (Institute for Biochemistry imeni A. N. Bakl; AS USSR)

PRESENTED:

November 25, 1957, by A. I. Oparin, Member, Academy of Sciences, AS USSR

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Card 4/4

AUTHORS:

Kulayev, I. S., Belozerskiy, A. N.

SOV/20-120-5-42/67

TITLE:

An Electrophoretic Investigation of Polyphosphate Ribonucleic Complexes Obtained From Aspergillus niger (Elektroforeticheskoye izucheniye polifosfatno-ribonukleinovykh kompleksov iz Asper-

gillus niger)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 5,

pp. 1080 - 1083 (USSR)

ABSTRACT:

In previous papers (Refs 1-3) two different polyphosphate fractions were found in the mentioned fungi species: a) a fraction which is soluble in acids, and b) a fraction which is not soluble in acids. The first is apparently in a free state in the cells, whereas the latter is connected with any cell components. According to the evidence obtained in the laboratory of the authors they are bound to the ribonucleic acid (RNA) by forming the complexes mentioned in the title. In the present paper the authors tried to solve the problem of the existence of such complexes in a new way: they investigated the electrophoretic homogeneity of the latter. Table 1 gives the analytical data which characterize the isolated preparation of the mentioned

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An Electrophoretic Investigation of Polyphosphate Ribonucleic Complexes Obtained From Aspergillus niger

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complex. There is no doubt that it is of polyphosphate nature. The authors succeeded under the given experimental conditions in separating a mechanical mixture of polyphosphate and RNA with different ratios of the components. An experiment with the polyphosphate ribonucleic complex from Aspergillus niger under the same conditions proved its electrophoretic homogeneity (Fig 2c). From the above mentioned it can be concluded that the electrophoretic mobility of the complex approaches rather closely that of RNA. However, it is shifted to a certain extent towards the direction of the polyphosphate. Thus the results obtained in the paper largely confirm the conception concerning the existence of polyphosphate ribonucleic complexes in the cells of low organisms (among them also A.niger) as actually existing compounds. Professor SYe. Bresler and V.D. Uspenskaya collaborated in this paper. 1 are are 3 figures, 1 table, and 13 references, 4 of which are Soviet.

Card 2/3

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

An Electrophoretic Investigation of Polyphosphate Ribonucleic Complexes Obtained From Aspergillus niger

30V/20-120-5-42/67

ASSOCIATION:

Institut biokhimii im. A.N.Bakha Akademii nauk SSSR (Institute of Biochemistry imeni A.N.Bakh, AS USSR) Moskovskiy gosudarst-vennyy universitet im.M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

PRESENTED:

February 24, 1958, by A. I. Oparin, Member, Academy of Sciences. USSR

SUBMITTED:

February 21, 1958

1. Fungi—Chemical analysis 2. Fungi—Properties 3. Phosphates —Determination 4. Ribonucleic acid—Determination 5. Complex compounds—Analysis

Card 3/3

SOV/20-122-3-53/57

AUTHORS: Belozerskiy, A. N., Corresponding Member, Academy of Sciences.

USSR, Naumova, I. B.

TITLE: On the Polysaccharide Fractions of Actinomyces Rimosus and

Actinomyces Aureofaciens (O polisakharidnykh fraktsiyakh

Actinomyces rimosus i Actinomyces aureofaciens)

Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 3, pp 441-444 PERIODICAL:

(USSR)

ABSTRACT: In the most recent times informations were published concerning

the chemical composition of the cell walls of some actinomycetes (Refs 1,2). These walls are of mucopolysaccharide character. Besides amino acids mainly amino sugars were observed. In some actinomycetes arabinose galactose and small amounts of mannose glucose, and rhamnose were found. In the present paper the authors extended their earlier work (Ref 4) to the fungi mentioned in the title which produce chloro-tetracycline and oxytetracycline. At the Vsesoyuznyy nauchnoissledovatel'skiy institut antibiotikov (All-Union Scientific Research Institute

for Antibiotics) the stem T-118 of the species of fungus men-

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SOV/20-122-3-33/57

On the Polysaccharide Fractions of Actinomyces Rimosus and Actinomyces Aureofaciens

old of the second species were obtained. Processing of the mycelium and the isolation of the polysaccharide fractions were carried out according to the method described in reference 4. Table 1 reveals the chemical characteristics of the mentioned fractions. It can be seen from it that A. aureofaciens contains 2 such fractions. The first fraction contains 54,4% of reducing agents and a small amount of phosphorus. The entire nitrogen of this fraction belongs to the hexosamine. In the second fraction only 19,1% of reducing agents are contained, on the other hand, however, it contains much more accompanying substances under the form of proteins. Also A. rimosus contains 2 polysaccharide fractions: I - with 22,5% of reducing agents and nitrogen as in the preceding species of fungus. Nitrogen of the II fraction belongs to a considerable extent to the proteins. It can be seen from a comparison of the chromatograms that the polysaccharide fractions of both species of fungus is characterized quantitatively by one and the same complex of sugars. They show, however, important quantitative differences. It can be seen from table 2 that in the polysaccharide of the I fraction of A. aureofaciens

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SOV/20-122-3-33/57 On the Polysaccharide Fractions of Actinomyces Rimosus and Actinomyces ureofaciens

> galactose and glucose predominate. In the polysaccharide of the II fraction mannose clearly predominates. In the case of A. rimosus a great amount of galactose and mannose is contained in the I fraction as well as of sugar as yet not identified. A successful quantitative determination of individual sugars of the II fraction could not be achieved. The chromatogram shows that it consists mainly of mannose and of the sugar not identified. In contrast to fraction I glucose content is small. In the fractions of the species of fungus investigated no such amounts of phosphorus were observed as was the case with A. globisporus Str. (up to 8,5%) (Ref 4). There are 1 figure, 2 tables, and 12 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED:

June 3, 1958

Card 3/3

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

BELOZERSKIY, A. N. and SPIRIN, A. S.

"A Correlation between the Compositions of Deoxyribonucleic and Ribonucleic Acids." Nature. Vol. 182 No. 4628, p. 111, 1958.

Inst. of Biochemistry im. A. N. Bakh Acad. Sci. USSR, Moscow.

BELOZERSKIY, Andrey Mikolayayich; OPARIN, A.I., akademik, otv.red.;
POTEKHINA, H.A., red.izd-va; MARKOVICH, S.G., tekhn.red.

[Nucleoproteids and nuclein acids in plants and their biological significance] Nukleoproteidy i nukleinovye kisloty rastenii i ikh biologicheskoe snachenie. Moskva, Izd-vo Akad.nauk SSSR, 1959. 45 p. (MIRA 12:6) (Nucleic acids) (Nuclein) (Botanical chemistry)

KONAREV, V.I., prof., otv.red.; BELOZERSKIY, A.N., red.; GENKEL!, P.A., prof., red.; SERGEYEV, L.I., prof., red.; MAZILKIN, I.A., kand. biolog.nauk, red.; KHANISLAMOV, M.G., kand.sel!skokhoz.nauk, red.; POROYKOV, Yu.D., red.; VALEYEV, G.G., tekhn.red.

[Biology of muclein metabolism in plants; reports at the joint scientific session of Nov.25-28, 1958] Biologiia mukleinovogo obmena u rastenii; doklady ob edinennoi nauchnoi sessii, 25-28 noiabria 1958 g. Ufa, 1959. 181 p. (MIRA 13:6)

1. Akademiya nauk SSSR. Bashkirskiy filial, Ufa. Institut biologii. 2. Chlen-korrespondent AN SSSR (for Belozerskiy). 3. Institut biologii Bashkriskogo filiala Akademii nauk SSSR (for Konarev, Mazilkin, Khanislamov).

(PLANTS-NETABOLISM) (NUCLEI

(NUCLEIC ACIDS)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4"

ZAYTSEVA, G.N.; BELOZERSKIY, A.N.

Electrophoretic study of protein components of Azotobacter as related to the species and age of culture and the source of nitrogen nutrition [with summary in English]. Biokhimiia 24 no.1:133-143 Ja-F 59.

(MIRA 12:4)
1. Faculty of Biology and Soil Sciences, Moscow State University.
(AZOTOBACTER, metab.

proteins, electrophoresis, eff. of species, culture age & nitrogen sources (Rus))
(PROTEINS, metab.

Azotobacter, electrophoresis, eff. of species, culture age & nitrogen sources (Rus))

Polyphosphate metabolism in submerged cultures of Penicillium chrysogenum Q-176.Biokhimiia 24 no.2:253-262 Mr-Ap '59 (MIRA 12:7) 1. Biochemical Institute, Academy of Sciences of the U.S.S.R., and Faculty of Biology and Soil Sciences of the State University, Moscow. (PENICILLIUM) (PHOSPHOHUS METABOLISM)

SPIRIN, A.S.; GAVRILOVA, L.P.; BELOZERSKIY, A.N.

Nature and methods of quantitative estimation of the "hyper-chromic effect" of nucleic acids. Biokhimiia 24 no.4:600-611 J1-Ag '59. (MIRA 12:11)

1. Institut biokhimii im. A.N.Bakha Akademii nayk SSSR i biologo-pochvennyy fakulitet Gosudarstvennogo universiteta im. M.V.Lomonosova, Moskva.

(NUCLEIC ACIDS chem.)

Phosphorus compounds of Asotobacter vinelandii during the development of the culture. Biokhimia 24 no.6:1054-1065 H-D *59.

(MIRA 13:5)

1. The Faculty of Biological and Soil Sciences, the State University, Moscow.

(PHOSPHATES metab.)

(AZOTOBACTER metab.)

ZAYTSEVA, G.N.; BELOZERSKIY, A.N.; AFANASIYEVA, T.P.

Chemistry of Azotobacter. Part 7: Studies on polysaccharides in three Azotobacter species and their relation to culture medium composition and nitrogen source [with summary in English]. Mikrobiologiia 28 no.1: 58-63 Ja-F 159. (MIRA 12:3)

1. Biologo-pochvennyy fakulitet Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.

(AZOTOBACTER, metabolism, polysaccharides, eff. of nitrogen source & medium content in various species (Rus))
(POLYSACCHARIDES, metab.

Asotobacter, eff. of nitrogen source & medium content in various species (Rus))

IMSHWNETSKIY, A.A.; PEROVA, K.Z.; ZAYTSEVA, T.A.; BELOZERSKIY, A.N. Transmission of streptomycin resistance in staphylococci by means of descrythonucleic acid. Mikrobiologiia 28 no.2: 187-190 Mr-Ap '59. (MIRA 12:5) 1. Institut mikrobiologii i Institut biokhimii AN SSSR. (STREPTOMYCIN, eff. on Micrococcus pyogenes, transfer of resist. with descrythonucleic acid (Rus)) (MICROCOCCUS PTOGENES, eff. of drugs on, streptomycin, transfer of resist. with descrythonucleic acid (Rus)) (DESCRYREDRUCLEIC ACID, on Micrococcus pyogenes, transfer of streptomycin-resist. (Rus))

ZAYTSEVA, G.N.; BELOZERSKIY, A.N.; BYKHOVSKIY, V.Ya.

Chemistry of Azotobacter. Report No.8:study of free amino acids and mononucleotides in Az. agile 22-D and their relation to the age of the culture and sources of nitrogen nutrition. Mikrobiologiia 28 no.5:675-682 S-0 159. (MIRA 13:2)

1. Biologo-pochvennyy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

(AZOTOBACTER chem.)

(AMINO ACIDS chem.)

(NUCLEOSIDES AND NUCLEOTIDES chem.)

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

17(3) AUTHORS: SOV/20-124-4-59/67 Gavrilova, L. P., Spirin, A. S., Belozerskiy, A. N., Corresponding

Member AS USSR

TITLE:

Spectrophotometric Study of the Effects of pH and Ion Strength on the Stability of High Polymer Ribonucleic Acid in Solution (Spektrofotometricheskoye izucheniye vliyaniya pH i ionnoy sily na stabil'nost' vysokopolimernoy ribonukleinovoy kisloty v rastvore)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 933-936 (USSR)

ABSTRACT:

Ribonucleic Acid (RNA) in vitro is extremely unstable. Even its simple preparative production from cell organisms results in a higher or lesser degree of degradation (Ref 1). Nor do any of the subsequently suggested production methods (Refs 2-7) furnish any evidence for the fact that the spontaneous losses in infective power occurring in this process (in this particular case the infective power of RNA from the tobacco mosaic virus - TMV) or a direct degradation of the polynucleotide are conditioned by the chemical instability of the polymer concerned, subject to certain conditions. On the one hand ribonuclease traces may occur in RNA preparations and cause the fermentative degradation of RNA in the course of incubation. On the other hand it is not known whether the spontaneous loss in infective power of virus RNA is caused by the one or the

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Spectrophotometric Study of the Effects of pH and Ion Strength on the Stability of Higher Polymer Ribonucleic Acid in Solution

other type of degradation or whether it is governed by entirely different mechanisms. In order to find out whether a progressive spontaneous degradation of polynucleotides takes place in the solutions of high molecular RNA, the authors employed spectrophotometric criteria. After all, the decomposition of the nucleic acids is accompanied by an intensification of their ultraviolet absorption (the "hyperchromic effect", Ref 8). In the case of the instability of the inter-nucleotide bonds of the polynucleotide, the ultraviolet absorption must increase progressively. High molecular RNA and TMV were used as materials. They were obtained by means of several re-precipitations of the leaf juice of mosaicdiseased tomato plants with ammonium sulfate, and by means of threefold preparative ultra-centrifuging. This procedure ensured the high purity of the TMV preparations, including, it seems, also that of ribonuclease admixtures. The RNA obtained therefrom possessed biological activity and infective power (about 1 % of a virus quantity of equal weight), immediately after production. It did not contain any virus particles. It thus constituted a native RNA preparation. For experiments with long incubation periods, buffer solutions with ion strengths (μ) of 0.01 to about 1 and different

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Spectrophotometric Study of the Effects of pH and Ion Strength on the Stability of Higher Polymer Ribonucleic Acid in Solution

pH were used. The RNA content of the solution was about 20-25µg/ml. Incubation takes place in a thermostat at 37° (with chloroform as an antiseptic). Table 1 shows the results: (1) The higher the ion strength of the buffer, the lower is the absorption of the RNA solution. This phenomenon was fully reversible and was by no means linked to the decomposition or denaturation of RNA. Infective power and high molecular weight remained unchanged. (2) Between pH 5.4 and 7.4 no absorption changes take place after 20 days of incubation, this phenomenon being independent of the ion strength of the solvent Thus the ribopolynucleotide is stable over this pH range. The loss in infective power is not accompanied by any noticeable changes in ultraviolet absorption. (3) On an incubation between pH 5.0 and 8.5 a certain tendency towards an absorption increase emerges. This RNA instability is marked only in solutions of high ion strength (µ~1). With pH 9.0, and even more so with pH 9.5, RNA is progressively decomposed at any ion strength. It can be concluded from the experiments that the spontaneous loss in infective power, on the 2nd-4th days of incubation, does not in any way affect the absorption value of RNA. Probably this process is not a consequence of the instability of the inter-nucleotide bonds.-There are 1 table and 11 references.

Card 3/4

SOV/20-124-4-59/67 Spectrophotometric Study of the Effects of pH and Ion Strength on the Stability of Higher Polymer Ribonucleic Acid in Solution

ASSOCIATION: Institut biokhimii im. A. N. Bakha Akademii nauk SSSR (Institute of Biochemistry imeni A. N. Bakh of the Academy of Sciences, USSR) Moskcyskiy gosudarstvennyy universitet imeni M.V. Lomonosov (Moscow State University imeni M.V. Lomonosov)

October 25, 1958

Card 4/4

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

17(3) AUTHORS:

Bukhovich, Ye., Belozerskiy, A. N., Corresponding Member, AS USSR

SOV/20-124-5-53/62

TITLE:

Some Data on the Mechanism of Synthesis and on the Utilization of Polyphosphates in Yeast Funguses (Nekotoryye dannyye o mekhanizme sinteza i ispol'zovaniya polifosfatov v drozhzhakh)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, pp 1147-1149 (USSR)

ABSTRACT:

The synthesis of acid-soluble as well as acid-insoluble polyphosphates forms a uniform process in some microorganisms (Refs 1-5). In the course of this synthesis first insoluble polyphosphates are produced from orthophosphate, and from them acid-soluble polyphosphates form. Intermediate members of the synthesis of acid-insoluble polyphosphates are some acid-proof phosphorus compounds of the acid-soluble fraction (Refs 3,4). The synthesis of these compounds is possible in the presence of 2,4-dinitrophenol (DNPh) if the synthesis of polyphosphates themselves as well as other phosphorus compounds of yeast is completely inhibited. For the purpose of intensifying these investigations the authors tried to investigate the mechanism of the transition of stable

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Some Data on the Mechanism of Synthesis and on the Utilization of Polyphosphates in Yeast Funguses

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acid-soluble phosphorus forms into polyphosphates. For this purpose a high amount of P^{32} was introduced into the fraction of stable acid-soluble phosphorus of the yeast funguses in the presence of DNPh. DNPh was then washed out and the course of the following distribution of P³² between the individual fractions of the phosphorus compounds was observed. First, the factory-made yeast was subjected to a long-term reduction of phosphorus (Ref 3). It was then used as starting material for the enrichment with phosphorus at a temporary presence of DNPh and P32 in the nutrient medium. For this purpose the yeast was transferred to a nutrient medium containing orthophosphate, mineral salts, saccharose, vitamins (Refs 6,7), and 4.10⁻⁴ M DNPh. After 15 minutes 0.5 mCu/liter of P³² were added. One hour later the yeast was centrifuged and put into a nonradioactive medium with DNPh where it remained for 1 hour and 15 minutes. In this way, the yeast was enriched with phosphorus in the presence of DNPh for 2.5 hours totally. Thus, a material was obtained containing P³² mainly in the fractions of the stable acid-soluble phosphorus.

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Some Data on the Mechanism of Synthesis and on the Utilization of Polyphosphates in Yeast Funguses

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The results of determination of the individual phosphorus forms (according to Ref 3) including those of the unstable phosphorus of the adenosin-triphosphoric acid (ATPh) are shown in table 1. These results showed again that in the presence of DNPh p32 can be absorbed by the orthophosphate fraction and the fraction of stable acid-soluble phosphorus although P³² absorption is completely inhibited in all other fractions of the phosphorus compounds of yeast. The activity of stable acid-soluble phosphorus decreases to zero immediately after the removal of DNPh. Simultaneously the specific activity of unstable acid-soluble phosphorus increases jump-like. The orthophosphate and the unstable ATPh phosphorus of the original yeast and of that enriched with phosphorus showed a relatively weak specific activity. After the transference of the yeast into a medium without phosphorus the specific activity of the ATPh immediately increased to the degree of activity of polyphosphates. This fact may indicate a direct transference of the polyphosphate phosphorus in the living cell into the adenylic system and that it can be used for various following synthetic reactions.

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Some Data on the Mechanism of Synthesis and on the Utilization of Polyphosphates in Yeast Funguses

Besides, the possible direct participation of polyphosphates in some synthetic processes apparently cannot be denied. An assumed scheme of the polyphosphate metabolism is given in conclusion. There are 1 table and 15 references, 7 of

which are Soviet.

ASSOCIATION:

Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova

(Moscow State University imeni M. V. Lomonosov)

SUBMITTED:

October 31, 1958

Card 4/4

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000204520004-4

∞i7(3) AUTHORS:

SOV/20-125-3-55/63 Spirin, A. S., Gavrilova, L. P.,

Belozerskiy, A. N., Corresponding Member, AS USSR

TITLE:

On the Problem of the Macromolecular Structure of Native High-polymeric Ribonucleic Acid in Solution (K voprosu o makromolekulyarnoy strukture nativnoy vysokopolimernoy

ribonukleinovoy kisloty v rastvore)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 658-661 (USSR)

ABSTRACT:

There are but very few data in publications concerning the problem mentioned in the title, despite considerable achievements in the study of desoxy ribonucleic acid (DNA). This is explained by the exceptional difficulty confronting the production of the acid mentioned in the title (RNA). At an earlier time, the authors reproduced (Ref 3) the experiments made by other scientists (Refs 1, 2) and in the present paper they describe the further progress made in the field under discussion (Refs 4-11). Figure 1 illustrates data on the comparative spectrophotometric titration of the native (infectious) RNA and of a denaturated DNA of the tobacco

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On the Problem of the Macromolecular Structure of Native High-polymeric Ribonucleic Acid in Solution SOV/20-125-3-55/63

mosaic virus. The intensification value of the absorption of ultraviolet rays by nucleic acids serves as a direct measure of the number of burst hydrogen bonds (Refs 7, 9, 10). It may be seen from figure 1 that in the case of the native DNA no important variations of the said values occur in the entire pH range from 7 to 3. Only at pH < 3 an unusually rapid jump of the absorption value of the native DNA takes place. This is explained by the fact that the macromolecule of the native DNA is built according to the type of the 2 rigidly and orderly coupled chains. These chains are kept together by means of specific hydrogen bonds, in which all NH, groups of adenine and cytosine residues in position 6 of the ring (Ref 12) participate. Only the guanine-NH2-group in position 2 can remain more or less free. It has the least pK_{a} , value (= 2.75) (Refs 9, 10). From the results obtained it follows that the spectrophotometric behavior of the native RNA does not show any similarity with that of the native DNA. On the contrary, the behavior of the former is in every way similar to that of denaturated DNA. This is indicative of the fact that there is no orderly and specific secondary structure (structure of

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On the Problem of the Macromolecular Structure of Native High-polymeric Ribonucleic Acid in Solution

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hydrogen bonds) in the na ive RNA. Spectrophotometric data lead to the conclusion that the macromolecule of native RNA is not built according to the type of a rigid 2-chain structure of native DNA, but is most likely to be a simple polynucleotide chain, which conglomerates to an irregular ball in the solution. Such a ball is subject to all rules of the flexible polyelectrolyte and is changed under the action of various circumstances without losing its infection power. There are 2 figures, 1 table, and 15 references, 2 of which are Soviet.

ASSOCIATION: Institut biokhimii im. A. N. Bakha Akademii nauk SSSR (Institute of Biochemistry imeni A. N. Bakh of the Academy of Sciences, USSR) Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED:

January 9, 1959

Card 3/3

17 (3) AUTHORS:

Uryson, S. O., Belozerskiy, A. N.,

307/20-125-5-52/61

Corresponding Member, AS USSR

TITLE:

The Nucleotide Composition of the Desoxyribenucleic and Ribonucleic Acids of Some Higher Plants (Nukleotidnyy sostav dezoksiribonukleinovykh i ribonukleinovykh kislot nekotorykh vysehikh rasteniy)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1141-1147 (USSR)

ABSTRACT:

The problems mentioned in the title are thoroughly investigated with respect to the specifity of the nucleic acids only what regards bacteria and animals. From the data given in publications concerning higher plants (Refs 1-3) no conclusions can be drawn to the specifity of the composition of the two acids mentioned in the title (DNA and RMA). The present paper deals with the investigation of the total nucleotide composition of plant species which belong to systematic groups which are too remote from one another. Furthermore was interesting whether 5-methyl cytosine is by all means bound to form an ingredient of the DNA of various plant species (Refs 1, 3). Seeds of 7 plant species of 6

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The Nucleotide Composition of the Mesoxyribonucleic 30V/20-125-5-52/61 and Ribonucleic Acids of Some Higher Plants

different families, 3 classes, and 2 types served for the investigation. The embryos of the following objects: Finus cembra, Triticum sp. and the germs of 2 other objects (beans = Phaseolus peanut = Arachis hypogeen) were taken. 3 species were used as entire seeds: poppy (Papaver), pumpkin (Cucurbita pepo), and onion (Allium capa). The initial material pulverized to fine flour was decreased by an alcohol-ether mixture (3:1) and then by dry ether, finally dried in the vacuum exsiccator. The determination method of the communication mentioned in the title was used with the method of reference 4 as base with additions and modifications especially concerning chromatographic separation (rechromatography). This was necessary since the hydrolysates were contaminated by various admixtures. 2 different mixtures of solvents were used: 1) An acid mixture (68 % isopropyl alcohol in 2N ECl (Ref 3)). Thus 5 nitrogen bases could be separated; 2) a weakly alkaline mixture (50 parts n-butanol and 10 parts 01 N 131,03) (Ref 1) which could separate 4 bases. On the one hand the results could be precisely defined by the use of ? mixtures,

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The Nucleotide Composition of the Desoxyvibonucleic SOV/20-125-5-52/61 and Ribonucleic Acids of Some Higher Plants

on the other hand 5-methyl cytosine could be reliably identified and determined. Paper sections which contained cytosine and methyl-cytosine were cut out from complete chromatograms produced with the first mixture and the latter transferred by means of water to a clean sheet of paper to a point and chromatographed anew in the second mixture (Ref 5). Table 1 shows the determination results of the total composition of the DMA of 7 plant species. Striking is in the first place the similarity of the total composition of the DNA of all investigated plants. The value of the specifity coefficient diffusions between 0.580 and 0.935. The DMA of all investigated types belonged to the AT-type, the DMA of all samples contained 5-methyl cytosine (9 = guanine, Ts = cytosine, MTs = methyl cytosine, A = adenine, T = thymine). The nucleotide composition of the RMA was determined by means of the method of the horizontal electromborasis (Ref 7). Table 2 gives the quantitative composition of the nucleotides of the RNA. It belongs on the strength of these data to the GTs-type and is in the case of almost all plant species equal. The RNA

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The Nucleotide Composition of the Desoxyribonucleic 307/20-125-5-52/51 and Ribonucleic Acids of Some Higher Plants

of the higher plants is rather similar to that of the bacteria (Ref 8). If it has a specifity, it is due to the sequence of the alternation of the nucleotides in the chain of the RNA molecule. The reason of the low variability of the DNA in higher plants, compared with bacteria, has hitherto not been found. Their specifity is in the case of higher organisms apparently due as well to the structure of the nucleotide chain in the molecule. There are 2 tables and 8 references, 4 of which are Soviet.

ASSOCIATION:

Institut biokhimii im. A. N. Bakha Akademii nauk 988R (Institute of Biochemistry imeni A. H. Bakh of the Academy of Sciences, USSR)

SUBMITTED:

January 21, 1959

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17(3)

SOV/20-126-5-59/69

AUTHORS:

Gavrilova, L. P., Spirin, A. S., Belozerskiy, A. N., Cor-

responding Member, AS USSR

TITLE:

The Effect of Temperature on the State of Macromolecules of Viral Ribonucleic Acid in Solution (Deystviye temperatury na sostoyaniye makromolekul virusnoy ribonukleinovoy kisloty v

rastvore)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1121-1124

(USSR)

ABSTRACT:

The authors have not succeeded in a former paper (Ref 1) to prove any clear correlation of the process of the spontaneous loss of the infectious power with the alteration of the physicochemical indices: the ultraviolet absorption, the vis-

cosity and the sedimentation. But further studies could show new characteristics in the behavior of the macromolecules of the infectious ribonucleic acid (RNA). In this article data about the viscosity and sedimentation are given. The production of the infectious (RNA) and the control of its infectious

power was carried out as in reference 1. In figure 1 the Card 1/4

character of the temperature dependence of this RNA in phos-

The Effect of Temperature on the State of Macromolecules of Viral Ribonucleic Acid in Solution

phate buffer can be seen. As curve 1 shows, no essential alteration of the viscosity takes place at a temperature increasing between 20 and 50°. At further heating a rapid increase of viscosity results, the maximum being at 60-70°. Therefore in this fixed and rather narrow temperature range a transformation of the RNA-molecules ensues from one state into an other. Thereat the molecules are not inactivated at once (that is they don't lose their infectious power). This transformation is reversible. Out of curve 2 it can be seen that RNA preparations which have lost their infectious power show none of the above mentioned temperature effects. It has proved that the amount of the viscosity increasing on heating is proportional to the infectious activity of the RNA-preparations. Out of figure 2 it can be seen that the temperature effect is even greater in 6 m urea buffered with phosphate and that it takes place at a deeper temperature (40-50°). At 50° the viscosity is quadrupled and remains now as before reversible. It remains also a function of the infectious activity (Fig 2: 2-4). At a complete loss of the infectiousity also the tem-

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> perature effect is missing (Fig 2: 5). To find out the reasons of this phenomenon sedimentation experiments at different temperatures were made. Out of table 1 follows that the tripling of the specific viscosity is accompanied by a decrease of the sedimentation constant to 1/3. This makes it credible that the temperature effect is combined with a rapid increasing of the particle asymmetry of the RNA. Apparently the RNA-polynucleotidechain is levelled existing at deep temperatures as skein of this or that shape (Refs 3-5). The decrease in the temperature of the said effect by urea lets suppose a considerable importance of the separation process of the hydrogen bonds on reaching the above effect. On comparing the infectious and noninfectious RNA-part a much smaller viscosity can be noticed at the latter than at the first but the sedimentation constants are near together in both cases. It is also imaginable that the infectious RNA-molecules exist at 50° in urea as more or less levelled unbroken 1-chains whilst the no more infectious RNA are represented by much shorter chains. But since (Ref 1) no clear difference can be noticed between the particle size

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of both RNA-forms the authors suppose that the unbroken 1-chain structure of the native RNA is changed into a broken one in the course of the loss of the infectious power (incubation at room temperature or at 37°). Out of all this it may be seen, that the amount of the temperature effect is a clear physicochemical criterion of the infectious power of the viral-RNA-preparations. There are 3 figures, 1 table, and 8 references, 7 of which are Soviet.

ASSOCIATION:

Institut biokhimii im. A. N. Bakha Akademii nauk SSSR (Institute of Biochemistry imeni A. N. Bakh of the Academy of Sciences, USSR) Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED:

April 3, 1959

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17(3)

AUTHORS:

SOV/20-127-2-63/70 Vanyushin, B. F., Belozerskiy, A. N., Corresponding Member

TITLE:

A omparative Investigation of the Composition of Ribonucleic

Acids in Higher Plants

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 2,

pp 455 - 458 (USSR)

ABSTRACT:

The composition mentioned in the title has hitherto been investigated only in several species (Refs 1-8). Conclusions cannot be drawn from these data to the composition of this acid (RNA) or to its variability limits in plants of different systematic groups. In the present paper the nucleotide composition of 28 plant species (representatives of 5 types, 6 classes, 23 orders, and 25 families; Ref 9) was investigated. Seeds, pollens, and thallom material served for this purpose (supplied by M. A. Mazurenko, F. D. Kostik, and M. S. Chichagova). The ribomononucleotides were separated by a) electrophoresis, and b) chromatographically a) The deliquescence of greater quanti-

ties of liquid (100 -400 Ml) was prevented by two graphite-pencil-

A Comparative Investigation of the Composition of Ribonucleic Acids in Higher Plants

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stripes. The position (sequence) of the nucleotides from the cathode to the anote was the following: cytidylic-, adenylic-, guanylic-, and un aylic acid. The mobility of these nucleotides was similar to that of the publications (Ref 11). Considerable quantities of pigmented substances disturb in the hydrolysates of the RNA of many substances so that the determination of the nucleotides was only possible by electrophoresis on paper. Table 1 shows the results. They show that certain differences in the RNA composition may be reliably detected only between the representatives of plants classes which are most remote from one another. This points to a relatively low specifity of this composition in the higher plants. The investigated plants differ not only with respect to their systematic position and origin, but also to their ecology; there are arboreal-, shrublike-, herbaceous-, annual-, and perennial plants, culture plants with a specialized metabolism (fruit- and oil plants, cereals, gutta producers) as well as uncultivated plants, relic species as well as the representatives of the recent families. In spite of these differences their total RNA composition is strikingly similar. This shows that the RNA composition depends

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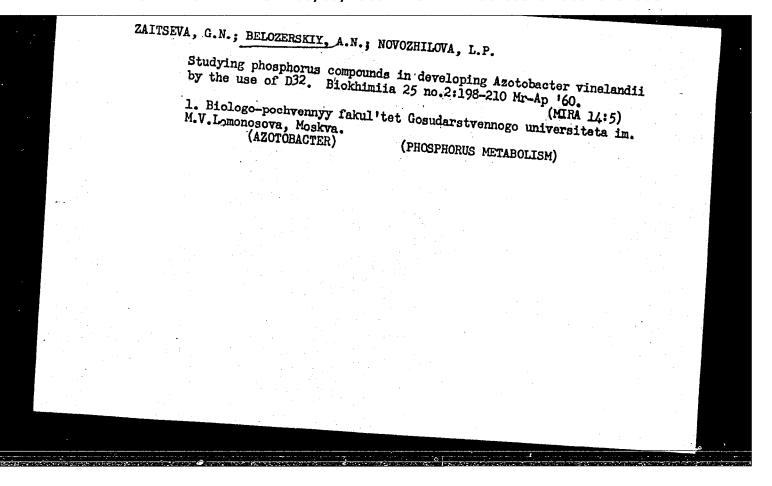
only little on the essential conditions for life of the plant organisms and changes only inconsiderably also in the course of their evolution. What is even more striking - the RNA composition is unusually similar to that of microorganisms and animals. Thus it is similar for all organisms. Therefore the nuclectide sequence in the RNA molecule chain must be investigated since the RNA specifity is apparently bound to be due mainly to this structural factor. There are 1 table and 13 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 30, 1959

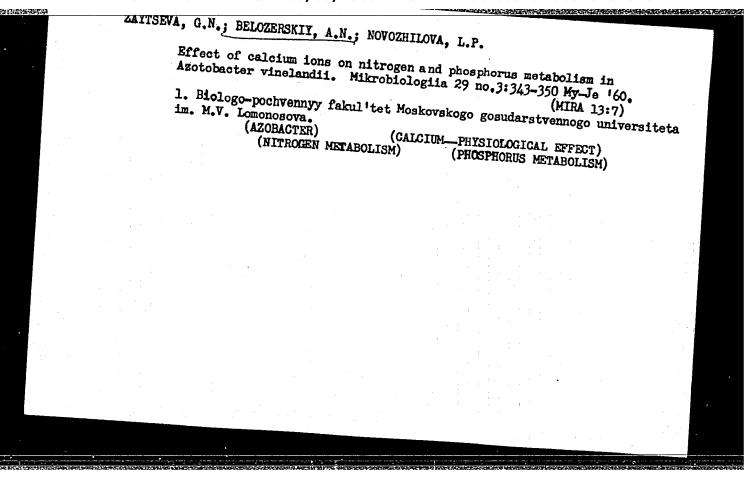
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	Metabolism of polyphosphates and some other phosphorus compounds during the development of fruit bodies in the mushroom Agaricus bisporus L. Biokhimiia 25 no.4:735-748 Jl-Ag '60. (MIRA 13:11) 1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R., Moscow.		
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VANYUSHIN, B.F.; BELOZERSKIY, A.H.; BOGDANOVA, S.L.

Comparative study of the nucleotide composition of ribonucleic and desoxyribonucleic acids in some fungi and myxomycetes. Dokl.

AN SSSR 134 no.5:1222-1225 0 '60.

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

2. Chlen-korrespondent AN SSSR (for Relozerskiy).

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